

CEP Discussion Paper No 624

March 2004

Do Organizational Climate and Strategic Orientation Moderate the Relationship Between Human Resource Management Practices and Productivity?

Andrew Neal, Michael A. West and Malcolm G. Patterson

Abstract

Contingency formulations of Human Resource Management (HRM) theory suggest that the effectiveness of HRM practices should vary across firms. This study examined whether the relationship between HRM practices and productivity in manufacturing companies is contingent upon organizational climate and strategic orientation. Information on HRM, organizational structure, and competitive strategy was collected by interviewing senior managers, whilst organizational climate was assessed via employee surveys. Although organizational climate and HRM practices were both positively associated with subsequent productivity, the relationship between HRM practices and subsequent productivity was stronger for firms with a poor climate.

JEL Classifications: M11, M12, J5, J24

Keywords: Human Resource Management, organisational structure, organisational climate, productivity.

This paper was produced as part of the Centre's Labour Markets Programme. The Centre for Economic Performance is financed by the Economic and Social Research Council.

Acknowledgements

Andrew Neal is a Senior Lecturer in the School of Psychology, University of Queensland. Michael A. West is a member of the Centre for Economic Performance, London School of Economics. He is also Professor of Organizational Psychology and Director of Research at Aston Business School, Birmingham. Malcolm Patterson is Research Fellow at the Institute of Work Psychology, University of Sheffield.

Published by
Centre for Economic Performance
London School of Economics and Political Science
Houghton Street
London WC2A 2AE

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission in writing of the publisher nor be issued to the public or circulated in any form other than that in which it is published.

Requests for permission to reproduce any article or part of the Working Paper should be sent to the editor at the above address.

© A. Neal, M. A. West and M. G. Patterson, submitted 2003

ISBN 0 7530 1749 0

Introduction

Over the past decade, there has been a great deal of interest in the relationship between Human Resource Management (HRM) practices and firm performance. A number of studies have demonstrated that HRM practices, either individually or in bundles, are associated with higher levels of productivity or effectiveness at the organizational level of analysis (e.g. Arthur, 1994; d'Ancimoles, 1997; Guest and Hoque, 1994; Hoque, 1999; MacDuffie, 1995; Youndt, Snell, Dean, and Lepak, 1996). A wide range of different practices has been examined in these studies. Some of the more commonly studied types of practices include staffing, training, performance appraisal, compensation, and job design. From a behavioral perspective, it has been argued that these types of practices can enhance organizational effectiveness by increasing the likelihood that employees will engage in behaviors that make a positive contribution to the organization (Schuler and Jackson, 1987; Wright and MacMahan, 1992).

One of the issues that has featured prominently in the HRM literature is the question of whether the relationship between HRM practices and productivity is universal or contingent. The universal, or “best practice”, view suggests that certain types of HRM practices are more effective than others (Pfeffer, 1994). For example, firms that use valid selection procedures should typically have more highly skilled and motivated staff than firms that do not use valid selection procedures (Schmidt, Hunter, McKenzie and Muldrow, 1979). Schuler and Jackson (1987), however, argue that the effectiveness of HRM practices varies, because firms differ in the types of behaviors that are required in order to maximize organizational effectiveness. The contingency view suggests that the effectiveness of HRM practices varies across firms, and depends on factors such as organizational climate and strategic orientation.

The specific HRM practices that we focus on are the use or provision of: (a) valid selection procedures; (b) induction programs; (c) training; (d) formal performance appraisals; (e) high levels of pay; (f) non-monetary benefits; (g) financial incentives; and (h) enriched jobs. The key factor that these practices share in common with each other is that they are all designed to enhance the knowledge, skill

and/or motivation of employees (Neal and Griffin, 1999), and have been argued by one or more authors to represent “best practice” in HRM (e.g. Huselid, 1995; Pfeffer, 1994).

Becker and Gehart (1996) have argued that assessments of HRM can be done at a number of levels. Most studies have focused on the way in which specific practices are implemented. For example, studies have evaluated selection procedures by assessing whether firms use employment tests (Huselid, 1995), hire internally or externally (Delery and Doty, 1996), and hire on the basis of physical skills or problem solving skills (Youndt, Snell, Dean and Lepak, 1996). Similarly, studies have evaluated performance appraisal by assessing whether firms use performance appraisals to determine compensation (Huselid, 1995), or whether the performance appraisal system is behaviorally-oriented or results-oriented (Delery and Doty, 1996; Youndt et al., 1996). One of the difficulties that researchers have encountered is that there are a number of different ways in which practices, such as selection, training and performance appraisal, can be implemented. These different approaches could be equally effective. Becker and Gehart (1996) have argued that the way in which specific practices are implemented is likely to be inherently contingent, and that “best practice” effects are more likely to be observed if researchers assess the higher level properties of the HRM system.

In the current study, we assessed the quality of the practices that each firm used, rather than assessing the way in which it implemented these practices. We had qualified industrial and organizational psychologists interview the relevant managers within each firm, and asked them to describe the practices that they used for selection, induction, training, performance appraisal, compensation, and job design. The interviewers then rated the quality of these practices. The aim was to assess the extent to which each firm used practices that subject matter experts believe should enhance the knowledge, skill and motivation of its staff, and to examine whether these practices are universally effective or not. Patterson, West, Guest and Peccei (2002) have shown that these ratings of HRM practices are positively associated with productivity in this sample. The aim of the current paper is to assess whether this relationship is contingent upon organizational climate and strategic orientation. In the following sections we define the concepts of organizational climate and strategic orientation, and develop a set of competing hypotheses regarding the way in which they may influence the effectiveness of these HRM practices.

Organizational Climate

The term “psychological climate” refers to individual perceptions of organizational attributes, such as policies, practices, and procedures (James, James, and Ashe, 1990; Reichers and Schneider, 1990). When these evaluations are shared by a sufficiently large number of people within a workplace, they are referred to as “organizational climate”. One of the most common types of climate examined within the literature is what James et al. (1990) refer to as “general psychological climate”, and Burke, Borucki, and Hurley (1992) refer to as a “human relations climate”. James et al. (1990) argued that individuals evaluate organizational attributes in terms of their own values and the significance of those attributes for their own well-being. James and James (1989) identified 17 dimensions from the climate literature, including factors, such as leader support, management concern, and job autonomy. Each of these dimensions was found to load onto a common underlying factor. This factor was argued to reflect “the extent to which the environment is personally beneficial vs personally detrimental (damaging or painful) to one’s sense of well-being” (James et al., 1990, p.53).

Organizational climate, like HRM, is thought to be an important determinant of organizational effectiveness. A positive organizational climate is thought to enhance employee motivation, and increase the likelihood that employees will allocate discretionary effort to their work tasks (Brown and Leigh, 1996; Neal and Griffin, 1999). A small number of studies have found that climate is positively associated with productivity at the organizational level of analysis (Hansen and Wernerfelt, 1989; Ostroff and Schmitt, 1993). Other studies have demonstrated that specific types of climate, such as service climate, are associated with other indicators of organizational effectiveness, such as customer satisfaction (e.g. Schneider, White, and Paul, 1998), and that closely related constructs, such as morale, are associated with organizational productivity (Koys, 2001; Ryan, Schmit, and Johnson, 1996). The first hypothesis, therefore, is as follows:

Hypothesis 1: Organizational climate will be positively associated with organizational productivity.

There are at least two theoretical positions that can be used to develop predictions regarding interactions between climate and HRM practices. As will be seen below, these two theoretical positions generate competing hypotheses.

Theoretical analyses of the concept of 'internal fit' among HRM practices (Baird and Meshoulam, 1988) provide one basis for developing predictions regarding interactions between climate and HRM practices. Researchers have argued that HRM practices are more likely to be effective if they fit into a coherent system in which all of the practices complement and support each other. Internal fit has most commonly been conceptualized as a synergistic relationship (Delery, 1998). Synergistic relationships occur when one variable enhances the effectiveness of the other, and vice versa. For example, Huselid (1995) argued that practices that enhance employee skill levels, such as selection and training, should be more effective when combined with practices that enhance employee motivation, such as performance appraisal. Along similar lines, MacDuffie (1995) argued that the knowledge and skills developed by HRM are of little use, unless the workforce is motivated to contribute discretionary effort to work activities. Employees are only likely to allocate discretionary effort "if they believe that their individual interests are aligned with those of the company, and that the company will make a reciprocal investment in their well-being" (p. 201). As noted previously, organizational climate reflects employees' perceptions of the extent to which the organization is concerned for their well-being, and has been found to influence employee motivation. These arguments suggest that the relationship between HRM quality and organizational productivity should be stronger when there is a favorable organizational climate, because employees will be more likely to allocate discretionary effort under these conditions.

Hypothesis 2a: There will be a positive interaction between organizational climate and subject matter experts' ratings of the quality of HRM practices. The relationship between HRM quality and productivity will be stronger when there is a favorable organizational climate.

Resource allocation theories of motivation (Kanfer and Ackerman, 1989) provide an alternative basis for developing predictions regarding interactions between climate and HRM. Resource allocation models assume that effort is a limited capacity resource. If an individual is already allocating a large proportion of his or her discretionary effort to a task, then interventions designed to enhance motivation

will have relatively little impact on task performance. These arguments suggest that if there is a favorable climate within an organization, then employees should already be allocating discretionary effort to their work tasks, and the organization should receive relatively little in the way of incremental benefit from the use of high quality HRM practices. Conversely, if there is a poor climate within an organization, then employees are unlikely to be allocating much discretionary effort to their work tasks. These organizations, therefore, may have more to gain from the use of high quality HRM. Resource allocation models, therefore, generate the following competing hypothesis:

Hypothesis 2b: There will be a negative interaction between organizational climate and subject matter experts' ratings of the quality of HRM practices. The relationship between HRM quality and productivity will be weaker when there is a favorable organizational climate.

Strategic Orientation

The term "strategic orientation" refers to the structures, strategies and processes a firm adopts in order to compete in the market place. One of the most commonly studied typologies of strategic orientation was developed by Miles and Snow (1978). Miles and Snow (1978) differentiate between four ideal types of organization: prospectors, analyzers, defenders, and reactors. These ideal types differ on a range of structural and strategic variables. The profile of each ideal type is described below (see Table 1).

Prospectors operate in turbulent and unpredictable environments. They use highly decentralized structures, minimize vertical differentiation within the firm, and maximize the interdependence of different units within the firm. In terms of strategy, prospectors focus on the development of new products or markets, and tend to serve a wide market segment. They respond rapidly to new market opportunities and do not engage in long term planning. Defenders, on the other hand, operate in stable and predictable environments. Defenders tend to be highly centralized and vertically differentiated, and the units within the firm tend to have relatively low levels of interdependence with each other. In terms of strategy, defenders attempt to gain a competitive advantage by emphasizing efficiency of operations and

focusing on a narrow market segment. They attempt to gain competitive advantage by cost leadership, and engage in long term strategic planning in order to do so. Analyzers focus on both product development and efficiency. The analyzer is typically conceptualized as a “middle-of-the-road” type, falling on the mid-point of a continuum between the prospector and defender (Doty, Glick and Huber, 1993). Reactors do not follow a consistent strategy, and are commonly thought to be a residual type, which is not effective (e.g. Hambrick, 1983).

The behavioral perspective suggests that the effectiveness of HRM practices should be contingent upon one or more components of strategic orientation (Miles and Snow, 1984; Schuler and Jackson, 1987). This type of effect is referred to as ‘external fit’. Specifically, the behavioral perspective suggests that prospectors should gain a greater benefit from the use of HRM practices that are designed to maximize employee knowledge, skill and motivation, than defenders. This is because prospectors use structures that minimize direct managerial control over employee behavior, and strategies that require a rapid response to market opportunities. Employees, therefore, have to work without high levels of supervisory control, and have to be adaptable and innovative. Defenders, on the other hand, use structures that maximize direct managerial control over employee behavior. Defenders can employ personnel with lower levels of knowledge, skill and motivation, because the work is highly constrained and there is less scope for individual differences to affect output. In this way, defenders are able to maintain high levels of output whilst minimizing the input costs associated with labor. Defenders, therefore, do not need to use sophisticated HRM practices (Miles and Snow, 1978). The relationship between HRM quality and organizational effectiveness should, consequently, be weaker for defenders than for prospectors.

Empirical tests of the prediction that strategic orientation should moderate the relationship between HRM and organizational effectiveness have produced inconsistent results. Most of this research has tested for interactions between HRM and competitive strategy. Some studies have found evidence that the effectiveness of HRM practices is contingent upon certain types of competitive strategy (Delery and Doty, 1996; Hoque, 1999; MacDuffie, 1995; Youndt et al., 1996), while others have not (Huselid, 1995). To our knowledge, only one study to date has examined whether the overall configuration of strategic and structural variables may influence the effectiveness of HRM practices.

Delery and Doty (1996) identified two systems of HRM practices used by US banks. The “internal” system was based upon internal labor markets, and was characterized by practices, such as training, behaviorally-oriented performance appraisal, participation in decision making, and narrow job definitions. The “external” system involved hiring from outside the firm, and was characterized by practices, such as results-oriented performance appraisals, financial incentives, and broad job definitions. The internal system was hypothesized to be more effective for banks with a strategic profile that closely matched the ideal type for defenders, while the external system was hypothesized to be more effective for banks with a strategic profile that closely matched the ideal type for prospectors. Delery and Doty (1996) tested these hypotheses by assessing whether the deviation between a bank’s employment system and the ideal employment system that was most appropriate for its strategic type predicted financial performance. The results did not support the hypotheses. In fact, the external system tended to be more effective than the internal system, regardless of the banks’ strategic and structural profile.

The current study assesses whether a firm’s strategic orientation moderates the effectiveness of HRM practices. Like Delery and Doty (1996), we use a configural approach for assessing strategic orientation. This approach involves calculating the deviation between each organization’s profile and the profiles of each ideal type. Unlike Delery and Doty (1996), however, we do not attempt to differentiate between alternate HRM systems, based on the way in which specific practices are implemented. As noted previously, our measure of HRM has a “best practice” orientation, focusing on the perceived quality of the practices. Based on the preceding arguments, we would expect strategic orientation to moderate the relationship between HRM quality and organizational productivity. Our final hypotheses are as follows:

Hypothesis 3: The relationship between subject matter experts’ ratings of the quality of HRM practices and productivity will increase as a firm’s strategic profile increasingly approximates the ideal profile for a prospector.

Hypothesis 4: The relationship between subject matter experts’ ratings of the quality of HRM practices and productivity will decrease as a firm’s strategic profile increasingly approximates the ideal profile for a defender.

We did not expect there to be a main effect for strategic orientation, because prospectors, analyzers and defenders are thought to be equally effective ideal types (e.g. Doty et al., 1993).

Method

Sample

The initial sample consisted of 92 UK manufacturing firms that agreed to participate in the study. The firms ranged in size from 60 to 1769 employees (mean size = 239). All firms carried out operations on a single site. We focused on small to medium single site firms in order to minimize the impact of rater error on our measures of HRM and strategic orientation. Huselid and Becker (2000) argue that the problems of rater error for HRM practices are likely to be greater in large companies, which are highly diversified. This is because the implementation of HRM practices is likely to vary widely within large companies. The mean size of firms in the current sample is between one and two orders of magnitude smaller than the mean size of firms in many previous studies (e.g. Gehart, 2000 [mean size = 46,396]; Huselid, 1995 [mean size = 4,413]).

We were able to obtain matched HRM, strategic orientation and productivity data for 74 of the firms in our sample. Forty-one of these firms also provided climate data. The climate data were collected from 5,415 individuals within these 41 companies. The 41 companies that provided climate data did not differ from these other companies on prior productivity, size, union coverage or industry sector.

Measures

Organizational Climate

Organizational Climate was measured using a questionnaire assessing employee perceptions of their work environment (Patterson, West, Lawthom, Matlis and Robinson, 2001). The questionnaire assessed four dimensions of climate common in the climate literature: participation, autonomy, welfare, and supportive leadership. Participants responded on a 4 point scale, ranging from (1) “definitely false” to (4) “definitely true”. Four items assessed the extent to which the organization was concerned for the welfare of employees ($\alpha=.91$). A sample item was “This company cares about its employees”. Six items assessed the extent of participation in decision making ($\alpha=.88$). A sample item was “Management involve people when decisions are made that affect them”. Five items assessed the extent to which employees had autonomy ($\alpha=.70$). A sample item was “Management keep a tight reign on the way things are done around here”. Five items assessed the extent of supportive leadership ($\alpha=.87$). A sample item was “Supervisors here are really good at understanding people’s problems”. We carried out an exploratory factor analysis in order to assess whether each of the climate scales load onto a common factor. The results suggested these scales do not form a single factor. For this reason, we carried out the analyses separately for each climate scale.

HRM Practices

HRM Practices were assessed by subject matter experts, who rated the quality of selection, induction, training, performance appraisal, non-monetary benefits and work design within each firm. These ratings were made on five or seven point scales, and were based on information provided by managers during semi-structured interviews (see Appendix). The managers themselves rated the pay rates for shop floor personnel, in relation to local competitors’ rates. Managers were asked to respond on a five-point scale (1 = ‘well below average’, 5 = ‘well above average’). For incentives, the interviewers recorded whether shop floor personnel were paid on the basis of individual output bonuses, team output bonuses,

merit ratings, company profit share and company bonuses (1= 'yes', 0 = 'no'). The extent to which the firm made use of financial incentives was calculated as the sum of these five items.

Following the recommendations of Huselid and Becker (2000), we selected the managers who had the best knowledge regarding the operation of each practice for interview. The primary interviewee was the manager responsible for HRM. These managers were asked to provide information regarding recruitment and selection, training, induction, performance appraisal, non-monetary benefits and pay. The production manager was also interviewed, and was asked to provide information regarding work design. The interview questions were asked in relation to both shop floor and managerial employees. Our analysis focuses on the HRM practices used for shop floor personnel only. A number of authors have argued that analyses of the HRM – effectiveness link should focus on the practices used to manage a “core” group of employees, because differences in the practices used to manage different groups of staff within the firm can obscure any effects (e.g. Arthur, 1994; Delery and Doty, 1996; Osterman, 1994).

The major reason for using interviews rather than surveys, as is typically the case, is that it allowed us to have subject matter experts rate the overall quality of the practices, rather than simply rely on the information provided by the respondents. Furthermore, it was that it was possible to ensure that the respondents understood what they were being asked, follow-up issues, and check any inconsistencies in the information that was being provided. The interviewers also examined available documentation to provide convergent evidence regarding these practices. The interviewers, therefore, had two sources of information regarding HRM practices to base their assessments on, allowing us to address the problems associated with single informant designs (Gehart, 2000). Finally, fifteen of the interviews were conducted in pairs, allowing us to assess the inter-rater reliability using the Intra Class Correlation (ICC: Shrout and Fleiss, 1979), for each of the items. The ICC values varied from 0.96 to 0.98, and had a mean of 0.97¹.

¹ The ICC value for performance appraisal is not included in this figure, because this variable was rated after the interview, and the interviewers discussed their ratings to resolve any disagreements.

We used the procedure followed by MacDuffie (1995) and Youndt et al. (1996) to create an overall index reflecting the extent to which each firm used high quality HRM practices. There were two reasons for using an overall index, rather than carrying out analyses separately for each practice. First, a number of authors have argued for the use of measures that reflect properties of the HRM system as a whole, rather than the individual practices (e.g. Huselid, 1995). Second, using a single index of HRM enhances the parsimony of the analysis, and reduces the number of interaction terms that are tested.

The HRM index was created by standardizing the eight component variables described above, and averaging the standard scores. An additive index provides the most appropriate test for the hypotheses, because it provides an overall measure of the extent to which firms used these practices². This index assumes that a low score on any one variable can be compensated for by a high score on any other. A multiplicative index was not appropriate, because an extreme score on any one variable would exert a disproportionate influence on the index as a whole (MacDuffie, 1995), and we had no basis for predicting on an a-priori basis whether the items within the index were substitutes for each other, or interacted synergistically (Delery, 1998).

Strategic Orientation

The components of Strategic Orientation were also assessed by interview. The primary interviewee was the CEO. The interview assessed a range of factors relating to the firms' structure and competitive strategy. The ratings for each construct were provided by the managers. The constructs and measures that were included are described below.

Three variables were used to assess structure. Centralization was assessed by 14 questions asking managers to identify the lowest level in the firm that had the authority to make different types of

² We did not assess the internal consistency of the HRM measure, because it is an index, rather than a scale. It is not appropriate to assess the internal consistency of an index, because the constituent items are not caused by a common underlying factor and they may be substitutable (Delery, 1998). For example, a firm may use high levels of pay or provide extensive non-monetary benefits to motivate staff. These practices will not necessarily be highly correlated. Items within scales, on the other hand, should be correlated because they are indicators of an underlying construct (e.g. climate). Internal consistency, therefore, does not provide a meaningful indication of the reliability or construct validity of an index.

decisions (e.g. 'spend unbudgeted money on capital expenditure items': $\alpha=.82$). Managers responded on a six point scale (1 = 'operator', 2 = 'supervisor', 3 = 'manager', 4 = 'manager reporting to MD', 5 = 'MD', 6 = 'above MD'). Vertical differentiation was assessed by asking the manager how many levels there were in production, from operator to the Chief Executive of the business unit. Structural interdependence was assessed by asking the manager to firstly name any permanent ongoing cross-functional/cross departmental groups that met for the purposes of joint decision making or planning, and then rate the frequency with which each of these teams met. The frequency ratings were made on a six point scale (1 = 'annually', 2 = '6 monthly', 3 = 'quarterly', 4 = 'monthly', 5 = 'weekly', 6 = 'daily'). The frequency ratings for each team were summed to create the measure of interdependence.

Four variables were used to assess strategy. Six questions assessed the importance of factors relating to efficiency for the firm's strategy (e.g. 'cost advantage in raw material procurement': $\alpha=.70$). Four questions assessed the importance of product and market development for the company's strategy (e.g. 'development of foreign markets': $\alpha=.66$). Managers responded to both sets of questions on a seven point scale (1 = 'not part of corporate strategy', 7 = 'central to corporate strategy'). Breadth of operations was assessed by two questions assessing the breadth of the firms' product line and customer base, by comparison with their competitors. Managers also responded to these questions on a seven point rating scale (1 = 'focus on one or a few small segments of the product line', 7 = 'very broad product line': $\alpha=.72$). Strategic planning was assessed by asking managers what period of time (in years) their strategic plan covered. Time was recorded as zero for companies that did not have a strategic plan.

Table 1 shows the ideal profiles for prospectors, analyzers and defenders. These profiles show the value of each component variable for each ideal type. The values for prospectors and defenders were specified as plus or minus one standard deviation from the mean of each variable. The analyzer was defined as a middle-of-the-road type, and was assigned the mean value for each variable. Strategic orientation was measured by assessing the extent to which each organization's strategic profile deviated from the three ideal profiles. The three deviation measures (deviation from the prospector, analyzer and defender ideal types) were calculated using the following formula from Doty et al. (1993):

$$D_{i,o} = \sqrt{\sum_{j=1}^k (X_{i,j} - X_{o,j})^2} \quad (1)$$

Where $D_{i,o}$ refers to the distance between ideal type i and organization o across k attributes, $X_{i,j}$ refers to the value of ideal type type i on attribute j , and $X_{o,j}$ refers to the value of organization o on attribute j . All attributes were given a unit weighting in the ideal profiles.

Productivity was measured in the three years prior to the study (Time 1), and the year after the study (Time 3). Productivity was calculated by dividing firm labor productivity by sector level productivity, and taking the logarithm of this result. Firm labor productivity was calculated as follows:

$$P = \frac{\left(\frac{p + d + i + s}{ppi} \right)}{n} \quad (2)$$

where P is firm labor productivity, p is pre-tax profits, d is depreciation, i is interest payable, s is staffing cost, ppi is the producer price index, and n is the number of employees in the firm. Sector level productivity and the producer price index were taken from the Monthly Digest of Statistics (London).

Control variables included productivity at Time 1, company size, union coverage, and industry sector. Company size was calculated as the logarithm of the number of employees. Union coverage was calculated as the proportion of employees belonging to a union. Industry sector was assessed using dummy variables coding for membership of the engineering (1=engineering, 0=non-engineering) and plastics (1=plastics, 0=non-plastics) sectors.

Procedure

The interviews were conducted on-site, with senior managers and directors over the course of 1 to 2 days. Information on company size and union coverage was obtained during the interview with the CEO, while the productivity data were taken from company financial and management accounts. There were four interviewers. All interviewers were qualified industrial and organizational psychologists, who had received a minimum of two weeks training in the administration of the interview schedule. Each

interviewer made their ratings independently and subsequently compared their ratings to resolve differences when the interviews were conducted in pairs.

The climate data were collected by questionnaire after the interviews. All employees were surveyed in companies with less than 500 employees. For companies with more than 500 employees ($n=4$), a 60% random sample was taken.

Data Aggregation

The current study examined climate, strategic orientation, HRM and productivity at the organizational level of analysis. The climate data, therefore, had to be aggregated to the organizational level. The level of within organization agreement in climate perceptions was evaluated using the $r_{WG(j)}$ statistic (James, Demaree and Wolf, 1984). The mean $r_{WG(j)}$ value for each scale was as follows: welfare (.76), participation (.81), autonomy (.84), and supportive leadership (.83). The mean across all scales was .81. These values are greater than the recommended minimum, and justify aggregation to the organizational level.

Results

The hypotheses were tested using a series of hierarchical multiple regression analyses. Table 2 shows the means and correlations of the independent variables, dependent variables, and control variables included in these analyses. All variables were converted to z scores prior to entry in the equation and before calculating the interaction terms, in order to minimize the effects of multicollinearity (Aiken and West, 1991).

The first set of analyses examined the effects of organizational climate. Separate analyses were carried out for each climate scale. Time 3 productivity was used as the dependent variable. Time 1 productivity, company size, union coverage, and industry sector were entered as control variables at step one. Organizational climate and HRM were entered at step two, while the interaction term (climate

x HRM) was entered at step three. By controlling for Time 1 productivity, these analyses effectively assess the effects of climate and HRM on changes in productivity. Table 3 shows the results of these analyses. The main effects for two of the climate scales (welfare and supportive leadership) at step 2 were significant, whereas the other two (participation and autonomy) were not (H1). The main effect for HRM at step 2 was significant in all analyses. Furthermore, there were negative interactions between participation and HRM, and between welfare and HRM (H2b). The interactions between autonomy and HRM, and supportive leadership and HRM approached significance. In the case of autonomy, the interaction was in a negative direction, while for supportive leadership, it was in a positive direction. As can be seen in Figures 1a and 1b, the effect of high quality HRM practices was stronger when employees reported low levels of participation and concern for welfare.

The second set of analyses examined the effects of strategic orientation. Separate analyses were carried out to assess the effects of deviations from the three different ideal types. Time 3 productivity was used as the dependent variable in these analyses. The control variables were entered at step 1, the deviation measures and HRM were entered at step 2, while the relevant interaction term (deviation from ideal type x HRM) was entered at step 3. Inspection of the data revealed a number of outliers falling more than four standard deviations from the mean on one or more of the interaction terms. There were two outliers on the prospector x HRM interaction term, two outliers on the analyzer x HRM interaction term, and one outlier on the defender x HRM interaction term. These outliers were removed from the analyses. As can be seen in Table 4, the measures of strategic orientation did not moderate the relationship between HRM and productivity. None of the interaction terms were significant.

The use of configural indices of strategic orientation was based on theoretical arguments suggesting that prospectors, analyzers and defenders represent distinct ideal types. However, if the three ideal types fall on a continuum, as argued by Doty et al. (1993), then an alternative approach to the assessment of strategic orientation is to use an additive index. We, therefore, carried out a series of post-hoc analyses using additive indices assessing structure and strategy. All structural and strategic variables were standardized, with centralization, vertical differentiation, focus on efficiency and strategic planning reverse scored. The structural index was created by averaging the scores for centralization,

vertical differentiation and interdependence. The strategic index was created by averaging the scores for focus on efficiency, focus on product/market development, breadth of operations and strategic planning. High scores on these indices are characteristic of prospectors, intermediate scores are characteristic of analyzers and low scores are characteristic of defenders. Eighty firms in the sample had matched structure, HRM and productivity data, while 74 firms had matched strategy, HRM and productivity data. We used hierarchical regression analyses to assess whether structure or strategy moderated the relationship between HRM quality and future productivity. Following the recommendations of Edwards and Parry (1993), we used polynomial terms to assess whether there were any non-linearities in the effects of strategic orientation or HRM. The additive index of structure did not predict future productivity, either as a main effect, or in interaction with HRM. However, there was a non-linear interaction between the additive index of strategy and HRM. As can be seen in Table 5, there was a significant interaction between the linear HRM term and the quadratic strategy term. The three dimensional function is shown in Figure 2. The relationship between HRM quality and productivity was the weakest for firms with an intermediate strategy. The relationship between HRM quality and productivity was stronger for firms with positive strategy scores (i.e., for prospectors), and for firms with negative strategy scores (i.e., for defenders).

Discussion

The current study makes a number of contributions to our understanding of the way in which organizational climate, strategic orientation and HRM practices relate to productivity. These are discussed below.

Firstly, this study demonstrates that employees' perceptions of the extent to which the firm is concerned for their welfare and the extent of supportive leadership predict subsequent changes in organizational productivity. These findings add to the relatively small body of literature that has assessed the link between climate and productivity at the organizational level of analysis, and is consistent with other research showing a link between specific types of climate and other organizational outcomes (e.g.

customer satisfaction). Furthermore, the results demonstrate that the effects of welfare and leadership remained significant after controlling for the effects of HRM practices, suggesting that the productivity gains experienced by firms with good climates were not directly attributable to the quality of HRM practices that they used. A number of authors have argued that HRM practices help to shape organizational climate, and hence the relationship between HRM and productivity is partially mediated by organizational climate (e.g. Ferris et. al, 1998; Rogg, Schmidt, Shull and Schmitt, 2001). Whilst it is true that three of the four climate scales are positively correlated with the subject matter experts' ratings of HRM, there is no evidence to suggest that any of the climate scales mediated the relationship between HRM and future productivity.

Secondly, this study demonstrates that employee perceptions of participation and welfare moderate the relationship between the quality of HRM practices and productivity. These interactions were negative, demonstrating that although subject matter experts' ratings of HRM practices are positively associated with changes in productivity, this effect is stronger for firms with low levels of participation and welfare. There are at least two potential explanations for the negative interaction between these dimensions of climate and the quality of HRM practices used by the firm. One explanation makes reference to the role of employee effort. According to this explanation, firms with a poor climate may gain the most benefit from the use of high quality HRM practices because their employees have the greatest amount of spare capacity. Firms with a good climate may gain less from the use of high quality HRM practices, because their employees already allocate a high proportion of discretionary effort to their work. A related explanation is that the negative interactions may reflect a ceiling effect. The relationship between the quality of HRM and future productivity may have been weaker for firms with a good climate, because these firms were already performing well, and there was less scope for improvements in productivity. However, if it is the case that firms with a good climate had less scope for improvement, because they were already doing well, then the climate scales should have been correlated with prior productivity. None of the climate scales were correlated with prior productivity, suggesting that firms with good climates were not already at a ceiling. In any case, the results with respect to participation, autonomy and welfare are not consistent with the alternate prediction derived from theoretical analyses of the concept of internal fit, namely that there is a

synergistic relationship between organizational climate and high quality HRM practices (e.g. MacDuffie, 1995). The interaction between supportive leadership and subject matter experts' ratings of HRM was positive, however, it did not reach conventional levels of significance. At a minimum, these results suggest that if there is a synergistic relationship between supportive leadership and HRM quality, it is not a strong effect. Overall, the current findings demonstrate that high quality HRM practices can be effective, even when employees believe that the work environment is not personally beneficial to their sense of well-being.

Thirdly, this study provides some evidence to suggest that strategic orientation may also moderate the relationship between high quality HRM practices and productivity, although these effects appear to depend on the way in which strategic orientation is operationalized. The configural indices of strategic orientation did not interact with HRM quality. The effectiveness of the HRM practices examined in the current study does not appear to depend on the extent to which the firm deviates from the ideal profiles for prospectors or defenders. However, the additive index of strategy did interact with subject matter experts' ratings of HRM quality. The relationship between quality of HRM practices and productivity was stronger for firms that used strategies that were characteristic of prospectors or defenders than for firms that used strategies that were characteristic of analyzers. This analysis suggests that, as expected, firms using strategies emphasizing innovation and breadth of operations did benefit from the use of high quality HRM practices. Firms emphasizing innovation and breadth of operations were expected to benefit from the use of high quality HRM practices, because they require employees with high levels of knowledge, skill and motivation in order to be able to compete in a rapidly changing environment. However, this analysis suggests that firms using strategies emphasizing efficiency also benefited from the use of high quality HRM practices. Firms using strategies emphasizing efficiency were not expected to benefit from the use of high quality HRM practices, because it was thought that these strategies minimize the requirement for highly skilled and motivated employees. These findings suggest that this assumption may be wrong. Firms trying to compete on the basis of efficiency may be at a disadvantage if they have employees with poor knowledge, skill and motivation. These arguments suggest that firms are more likely to benefit from the use of high quality HRM practices when they attempt to gain competitive advantage either by being more innovative than their competitors, or by

being more efficient than their competitors. Analyzers may not gain as much benefit from the use of high quality HRM practices, because they are following a “middle-of-the-road” strategy, and not attempting to differentiate themselves on the basis of innovation or efficiency.

These results provide the first empirical verification of the claim that the fit between HRM practices and climate is an important predictor of changes in productivity over time. The analysis including climate and HRM accounted for between 20% and 24% of the variance in subsequent productivity. These findings are strengthened by the fact that we controlled for a wide range of confounding factors, including prior productivity, organizational size, union coverage, and industry sector. Furthermore, the study used a longitudinal design, with multi-source data. Our findings, therefore, are not confounded by common method variance, and we have a stronger basis for inferring causality than studies that have used cross-sectional designs.

Limitations

The major limitation of the current study was sample size. With only 41 firms providing climate data, we only had sufficient power to detect large effect sizes for the analyses involving climate. With these levels of power, care needs to be taken when interpreting effects that did not reach significance. However, the lack of power does not affect the interpretation of effects that did reach significance. The interactions involving participation, welfare and HRM reached conventional levels of significance, even though we had a small sample. Furthermore, we had over 70 firms for the analyses involving strategic orientation, giving us sufficient power to detect both large and medium effect sizes.

A second limitation of the study was the collection of the climate, strategic orientation and HRM data at a single point in time. If climate, strategic orientation and HRM were assessed at multiple points in time, then it would be possible to assess the direction of causality for the relationships among these variables. However, we did collect productivity at multiple points in time. By controlling for prior productivity, we are able to rule out a number of alternative explanations for the interactions among climate, strategic orientation and HRM that are based on reverse causation. For example, one

alternative explanation for the negative interaction between climate and HRM could be that poor productivity causes firms with a poor climate to reduce their investment in HRM practices. Alternatively, poor productivity might create a poor climate if firms do not use high quality HRM practices. Our results are not consistent with these explanations, because they show that interactions with climate and strategic orientation at one point in time are associated with subsequent changes in productivity.

A final limitation concerns the way in which HRM practices were measured and the results are interpreted. In many respects, the use of subjective ratings of HRM practices, based on interview data, is a strength of the design. However, it is important to note that these ratings focused on the global properties of each practice. Thus, the focus of the current study was on the extent to which purportedly “best practice” approaches to HRM depend on climate and strategic orientation. The HRM ratings obtained in the current study do not provide information regarding the way in which each practice was implemented. Our results, therefore, do not provide guidance with respect to the way in which these practices should be implemented (e.g. whether firms should use behaviorally-oriented or results-oriented performance appraisals), and whether the approach to implementing these practices should be modified to accommodate the firm’s climate or strategic orientation.

Conclusion

The results from the current study suggest that firms may gain greater benefits from the use of high quality HRM practices if they have a poor climate, or if they are attempting to gain a competitive advantage by being more innovative or efficient than their competitors. High quality HRM practices appear to provide fewer benefits, in terms of productivity, if a firm has a good climate, or if it is pursuing a “middle-of-the-road” strategy. Additional research is needed to identify the mechanisms that underlie these effects, and to assess whether these findings generalize beyond the current sample. Regardless of the mechanism involved, it appears that the effectiveness of HRM practices does vary across firms, and

that managers need to consider the organizational context when making decisions about the use of these practices.

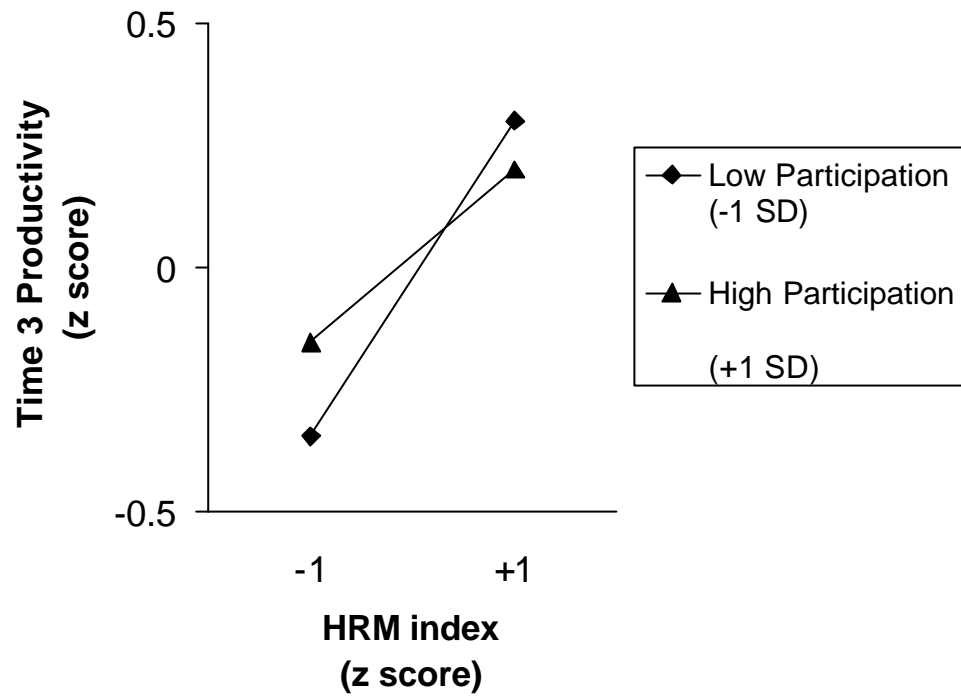


Figure 1a: Interaction between participation and quality of HRM practices

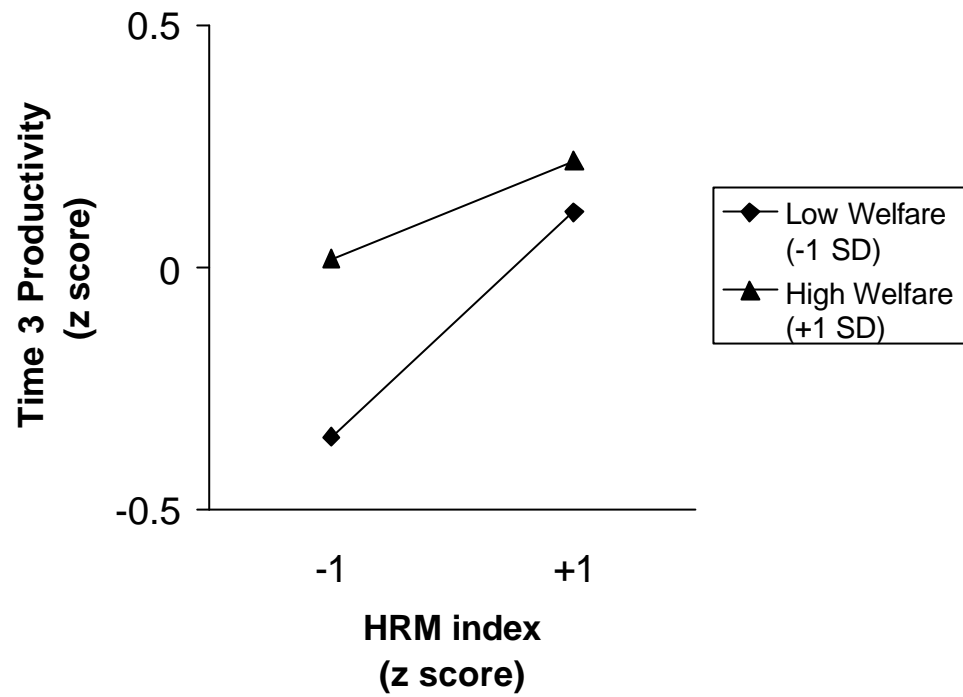


Figure 1b: Interaction between welfare and quality of HRM practices

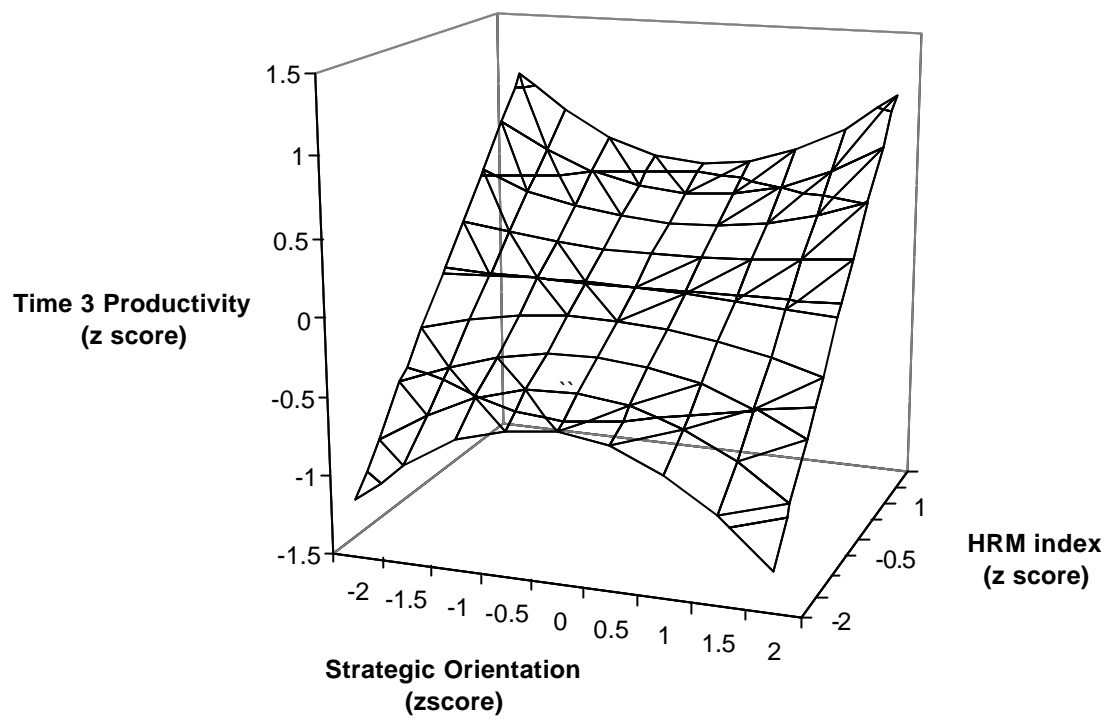


Figure 2: Three-dimensional relationship between strategy, HRM quality, and subsequent productivity

Table 1: Values for the ideal profiles of prospectors, analyzers and defenders (z scores)

	Prospector	Analyzer	Defender
Structure			
Centralization	-1	0	+1
Vertical differentiation	-1	0	+1
Structural interdependence	+1	0	-1
Strategy			
Focus on efficiency	-1	0	+1
Focus on product/market development	+1	0	-1
Breadth of operations	+1	0	-1
Strategic planning	-1	0	+1

Table 2: Means, standard deviations, and inter-correlations of control variables, independent variables, and dependent variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Participation	2.32	0.30		.41	.41	.41	.41	.41	.41	.41	.41	.41	.41	.41	.41
2. Autonomy	2.31	0.19	.63*		.41	.41	.41	.41	.41	.41	.41	.41	.41	.41	.41
3. Welfare	2.59	0.36	.71*	.41*		.36	.36	.36	.36	.36	.36	.36	.36	.36	.36
4. Supportive leadership	2.65	0.22	-.02	-.05	.62*		.41	.41	.41	.41	.41	.41	.41	.41	.41
5. Deviation from Prospector	1.35	0.32	-.29	-.24	-.11	-.10		.74	.74	.74	.74	.74	.74	.73	.74
6. Deviation from Analyzer	0.94	0.24	-.14	-.05	-.04	-.10	.41*		.74	.74	.74	.74	.74	.73	.74
7. Deviation from Defender	1.35	0.35	.15	.17	.09	-.03	-.51*	.55*		.74	.74	.74	.74	.73	.74
8. HRM index	0.00	0.59	.32*	.35*	.34*	.13	-.44*	-.31*	.13		.74	.74	.74	.73	.74
9. Time 1 Productivity	2.75	0.44	.12	.29	.12	-.14	-.03	.11	.14	.39*		.74	.74	.73	.74
10. Time 3 Productivity	2.55	0.48	.24	.20	.49*	.27	-.25*	-.11	.12	.53*	.65*		.74	.73	.74
11. Union coverage	38.41	40.68	-.24	.12	-.15	-.11	.21	.10	-.08	-.09	-.15	-.23*		.73	.74
12. Size	5.15	0.63	.10	.19	.23	.13	-.02	-.17	-.16	.34*	.21	.10	.15		.74
13. Sector (engineering)	0.53	0.50	-.01	.26	-.31	-.34*	-.07	.02	.09	-.18	-.16	-.38*	.30*	-.03	
14. Sector (plastics)	0.28	0.45	.05	-.16	.20	.21	-.01	.06	.02	.05	.00	.24*	-.18	-.06	-.66*

Note: 1. * $p < .05$; 2. Correlations are shown below the diagonal, while sample size is shown above the diagonal.

Table 3: Results of regression analyses assessing the effects of organizational climate on productivity

		Participation			Autonomy			Welfare			Leadership		
		Step			Step			Step			Step		
		1	2	3	1	2	3	1	2	3	1	2	3
β													
	Time 1	.54*	.37*	.45*	.54*	.36*	.37*	.53*	.37*	.40*	.54*	.44*	.47*
	Productivity												
	Union coverage	-.13	-.11	-.05	-.13	-.13	-.14	-.16	-.11	-.09	-.13	-.10	-.10
	Size	-.05	-.14	-.12	-.05	-.14	-.10	-.02	-.16	-.07	-.05	-.16	-.21 ^t
	Sector	-.14	-.10	-.20	-.14	-.14	-.15	-.12	-.01	-.05	-.14	-.02	-.09
	(engineering)												
	Sector (plastics)	.22	.20	.16	.22	.19	.23	.22	.19	.23 ^t	.22	.20	.09
	Climate		.05	.08		.11	.07		.32*	.33*		.25*	.25*
	HRM index		.38*	.39*		.36*	.35*		.33*	.26 ^t		.36*	.38*
	Climate X HRM index			-.38*			-.20 ^t			-.28*			.21 ^t
Adj		.41	.51	.65	.41	.51	.54	.39	.58	.65	.41	.57	.60
R ²													
R ²			.11	.13		.11	.03		.19	.06		.16	.04
Δ													
F Δ		6.61*	4.29*	14.28*	6.61*	4.64*	2.91 ^t	5.41*	8.03*	6.30*	6.61*	7.22*	3.89 ^t
Df		5,35	2,33	1,32	5,35	2,33	1,32	5,30	2,28	1,27	5,35	2,33	1,32

Note: 1. * $p < .05$; 2. ^t $p < .1$.

Table 4: Results of the regression analysis assessing the effects of strategic orientation

		Deviation from Prospector			Deviation from Analyzer			Deviation from Defender		
		Step			Step			Step		
		1	2	3	1	2	3	1	2	3
β										
	Time 1 Productivity	.66*	.59*	.59*	.63*	.57*	.56*	.60*	.49*	.49*
	Union coverage	-.01	.01	.01	-.04	-.01	.02	-.07	-.04	-.05
	Size	-.04	-.09	-.11	-.03	-.12	-.14	-.02	-.10	-.10
	Sector (engineering)	-.21 ^t	-.20 ^t	-.21 ^t	-.18	-.16	-.20 ^t	-.19	-.16	-.15
	Sector (plastics)	.10	.10	.11	.10	.11	.10	.10	.11	.12
	Deviation from ideal profile		-.08	-.08		-.09	-.08		.00	-.01
	HRM index		.17	.16		.23*	.26*		.33*	.32*
	Deviation X HRM index			.13			.14			-.04
Adj R ²		.52	.55	.56	.47	.52	.53	.44	.51	.51
R ² Δ			.04	.02		.06	.02		.08	.00
F Δ		16.11*	2.83 ^t	2.40	13.39*	4.12*	2.50	12.35*	6.09*	0.19
Df		5,65	2,63	1,62	5,65	2,63	1,62	5,66	2,64	1,63

Note: 1. * p<.05; 2. ^t p <.1.

Table 5: Results from a post-hoc analysis using an additive index of strategy

		Step		
		1	2	3
β				
	Time 1 Productivity	.65*	.54*	.55*
	Union coverage	-.02	.01	-.05
	Size	-.01	-.08	-.12
	Sector (engineering)	-.19 ^t	-.18	-.14
	Sector (plastics)	.09	.10	.17
	Strategy (Linear)		.12	-.02
	Strategy (Quadratic)		.02	-.03
	HRM index		.23*	.47*
	Strategy (Linear) X HRM index			.02
	Strategy (Quadratic) X HRM index			.36*
Adjusted		.50	.55	.60
R^2				
$R^2 \Delta$.06	.06
F Δ		15.88*	3.23*	5.09*
df		5,68	3,65	2,63

Note: 1. * $p < .05$; 2. ^t $p < .1$.

Appendix: HRM Interview Schedule

HRM Practice	Interview questions	Interviewer's rating scale
Selection	What is the typical procedure when filling vacant posts for shop floor personnel?	1 = 'none', 5 = 'excellent'
Induction	What type of formal induction, if any, do you have for new shopfloor employees? How long does it last? What does it cover?	1 = 'none', 5 = 'excellent, careful planning'
Training	Is there an overall training strategy? If so, what is it? What are the main objectives over the next three years with regarding to training? How are the training needs of the workforce were assessed? How would you describe the approach to training in this organization (on a five point scale ranging from 1 - "very reactive, responding as demands arise", through to 5 - "highly planned and organized")? What is the training budget for this year? Compared with last year, does it represent an increase or decrease? How well does it meet company training needs? What are the main sorts of training taking place for shop floor personnel?	1 = 'none', 5 = 'very extensive'
Performance appraisal	Is there a formal appraisal system? Who is appraised? How long has the scheme been in operation? How often are employees appraised? Are appraisals linked in any way to pay? If so how? Do appraisers receive any formal training? Is there a system to monitor whether appraisals have taken place as they should?	1 = 'none', 5 = 'excellent'
Non-monetary benefits	What would you describe as being the main benefits that shop floor personnel receive (e.g. subsidized canteen, pensions, private health, company care etc.)?	1 = 'none', 5 = 'excellent'

Work design	<p>What percentage of blue-collar employees are unskilled-, semiskilled-, and skilled-manuals? What caliber of person are you typically looking for in semi-skilled and skilled jobs? On average, how long would the training be for these two classes of job? Are shop floor personnel predominantly single skilled or multi-skilled? To what extent have you organized work so that teams, rather than individuals, have responsibility? Where are the teams, who leads them, and who sets their targets? In the typical job, what is the approximate time per task cycle? How much variety exists within a shop floor job? Is there a deliberate policy of job rotation? If so, how extensive is it? To what extent are operators were responsible for or involved in the following: A significant quality problem, material supply problems, machine repair following minor breakdown, routine maintenance of machines, setting up machine for changeover of product, setting up machine for a new product, when to take breaks, the order in which to do their work (on a four point scale ranging from “Not at all” to “Very much”).</p>	<p>1 = ‘very low degree of enrichment’, 7 = ‘very high degree of enrichment’</p>
-------------	--	--

References

- Aiken, L. S. and West, S. G. (1991), *Multiple Regression: Testing and Interpreting Interactions*, Newbury Park, Sage Publications: California.
- Arthur, J. B. (1994), 'Effects of Human Resource Systems on Manufacturing Performance and Turnover', *Academy of Management Journal*, 37, pp. 670-687.
- Baird, L. and Meshoulam, I. (1988), 'Managing Two Fits of Strategic Human Resource Management', *Academy of Management Review*, 13, pp. 116-128.
- Barnard, C. I. (1938), *The Functions of the Executive*, Harvard University Press: Cambridge, MA.
- Brown, S. P. and Leigh, T. W. (1996), 'A New Look at Psychological Climate and its Relationship to Job Involvement, Effort and Performance', *Journal of Applied Psychology*, 81, pp. 358-368.
- Burke, M. J., Borucki, C. C. and Hurley, A. E. (1992), 'Reconceptualizing Psychological Climate in a Retail Service Environment: A Multiple Stakeholder Perspective', *Journal of Applied Psychology*, 77, pp. 717-729.
- d'Arcimoles, C. H. (1997), 'Human Resource Policies and Company Performance: A Quantitative Approach Using Longitudinal Data', *Organization Studies*, 18, pp. 857-874.
- Delery, J. E., and Doty, D. H. (1996), 'Modes of Theorizing in Strategic Human Resource Management: Tests of Universalistic, Contingency and Configurational Performance Predictions', *Academy of Management Journal*, 39, pp. 802-835.
- Delery, J.E. (1998), 'Issues of Fit in Strategic Human Resource Management: Implications for Research', *Human Resource Management Review*, 8, pp. 289-309.
- Doty, D. H., Glick, W. H. and Huber, G. P. (1993), 'Fit, Equifinality, and Organizational Effectiveness: A Test of Two Configural Theories', *Academy of Management Journal*, 36, pp. 1196-1250.
- Edwards, J. R. and Parry, M. E. (1993), 'On the Use of Polynomial Regression Equations as an Alternative to Difference Scores in Organizational Research', *Academy of Management Journal*, 36, pp. 1577-1613.
- Ferris, G. R., Arthur, M. M, Berkson, H. M, Kaplan, D. M., Harrell-Cook, G. and Frink, D. W. (1998), 'Toward a Social Context Theory of the Human Resource Management – Organization Effectiveness Relationship', *Human Resource Management Review*, 8, pp. 235-264.

- Gehart, B., Wright, P. M., McMahan, G. C. and Snell, S. C. (2000), 'Measurement Error in Research on Human Resources and Firm Performance: How Much Error Is There and How Does It Influence Effect Size Estimates?', Personnel Psychology, 53, pp. 803-834.
- Guest, D. and Hoque, K. (1994), 'The Good, The Bad and The Ugly: Employee Relations in New Non-Union Workplaces', Human Resource Management Journal, 5, pp. 1-14.
- Hambrick, D. C. (1983), 'Some Tests of the Effectiveness and Functional Attributes of Miles and Snow's Strategic Types', Academy of Management Journal, 26, pp. 2-26.
- Hannan, M. T. and Freeman, J. (1977), 'The Population Ecology of Organizations', American Journal of Sociology, 82, pp. 929-964.
- Hansen G. S and Wernerfelt B. (1989), 'Determinants of Firm Performance: The Relative Importance of Economic and Organizational Factors', Strategic Management Journal, 10, pp. 399-411.
- Hoque, K. (1999), 'Human Resource Management and Performance in the UK Hotel Industry' British Journal of Industrial Relations, 37, pp. 419-443.
- Huselid, M. A. (1995), 'The Impact of Human Resource Management Practices on Turnover, Productivity and Corporate Financial Performance', Academy of Management Journal, 38, pp. 635-672.
- Huselid, M. A. and Becker, B. E. (2000), 'Comment on "Measurement Error in Research on Human Resources and Firm Performance: How Much Error Is There and How Does It Influence Effect Size Estimates?" by Gehart, Wright, McMahan and Snell', Personnel Psychology, 53, pp. 835-854.
- James, L. A. and James, L. R. (1989), 'Integrating Work Environment Perceptions: Explorations Into the Measurement of Meaning', Journal of Applied Psychology, 74, pp. 739-751.
- James, L. R., Demaree, R. G., and Wolf, G. (1984), 'Estimating Within-Group Interrater Reliability With and Without Response Bias', Journal of Applied Psychology, 69, pp. 85-98.
- James, L. R., James, L. A., and Ashe, D. K. (1990), 'The Meaning of Organizations: the Role of Cognition and Values', in B. Schneider (Ed.), *Organizational Climate and Culture*, Jossey-Bass: San Francisco, pp. 40-84.
- Kanfer, R. and Ackerman, P. L. (1989), 'Motivation and Cognitive Abilities: An Integrative/Aptitude-Treatment Interaction Approach to Skill Acquisition', Journal of Applied Psychology, 74, pp. 657-690.

- Koys, D. J. (2001), 'The Effects of Employee Satisfaction, Organizational Citizenship Behavior and Turnover on Organizational Effectiveness: A Unit-Level, Longitudinal Study', Personnel Psychology, 54, pp. 101-114.
- MacDuffie, J. P. (1995), 'Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry', Industrial and Labor Relations Review, 48, pp. 197-221.
- Miles, R. E. and Snow, C. C. (1978), *Organization, Strategy, Structure and Process*, McGraw-Hill: New York.
- Miles, R. E. and Snow, C. C. (1984), 'Designing Strategic Human Resources Systems', Organizational Dynamics, 13, pp. 36-52.
- Neal, A. and Griffin, M. A. (1999), 'Developing a Theory of Performance for Human Resource Management', Asia Pacific Journal of Human Resources, 37, pp. 44-59.
- Ostroff, C. and Schmitt, N. (1993), 'Configurations of Organizational Effectiveness and Efficiency', Academy of Management Journal, 36, pp. 1345-1361.
- Osterman, P. (1994), 'How Common is Workplace Transformation and Who Adopts It?', Industrial and Labor Relations Review, 47, pp. 173-188.
- Patterson, M. G., West, M. A., Guest, D. and Peccei, R. (2002), 'HRM, Employee Attitudes and Company Performance', mimeograph, Human Resource Management and Employment Relations, King's College London.
- Pfeffer, J. (1994), *Competitive Advantage Through People: Unleashing the Power of the Work Force*, Harvard Business School Press: Boston.
- Pfeffer, J. and Cohen, Y. (1984), 'Determinants of Internal Labor Markets in Organizations', Administrative Science Quarterly, 29, pp. 550-572.
- Reichers, A. E. and Schneider, B. (1990), Climate and culture: An Evolution of Constructs', in B. Schneider (Ed.), *Organizational Climate and Culture*, Jossey-Bass: San Francisco, pp. 40-84.
- Rogg, K. L., Schmidt, D. B., Shull, C. and Schmitt, N. (2001), 'Human Resource Practices, Organizational Climate, and Customer Satisfaction', Journal of Management, 27, pp. 431-449.
- Ryan, A. M., Schmit, M. J. and Johnson, R. (1996), Attitudes and Effectiveness: Examining Relations at the Organizational Level, Personnel Psychology, 49, pp. 853-882.

- Schneider, B., White, S. S. and Paul, M. C. (1998), 'Linking Service Climate and Customer Perceptions of Service Quality: Tests of a Causal Model', Journal of Applied Psychology, 83, pp. 150-163.
- Schuler, R. S. and Jackson, S. E. (1987), 'Linking Competitive Strategies With Human Resource Management Practices', Academy of Management Executive, 1, pp. 207-219.
- Shrout, P. E. and Fleiss, J. L. (1979), 'Intraclass Correlations: Uses in Assessing Rater Reliability', Psychological Bulletin, 86, pp. 420-428.
- Wright, P. M. and McMahan, G. C. (1992), 'Theoretical Perspectives for Strategic Human Resource Management', Journal of Management, 18, pp. 295-320.
- Youndt, M. A., Snell, S. A., Dean, J. W., and Lepak, D. P. (1996), 'Human Resource Management, Manufacturing Strategy, and Firm Performance', Academy of Management Journal, 39, pp. 836-866.

CENTRE FOR ECONOMIC PERFORMANCE
Recent Discussion Papers

623	Michele Pellizzari	Do Friends and Relatives Really Help in Getting a Good Job?
622	Steven McIntosh	The Returns to Apprenticeship Training
621	Steven McIntosh	The Impact of Vocational Qualifications on the Labour Market Outcomes of Low-Achieving School-Leavers
620	David Marsden	The 'Network Economy' and Models of the Employment Contract: Psychological, Economic and Legal
619	Alan Manning	Instrumental Variables for Binary Treatments with Heterogeneous Treatment Effects: A Simple Exposition
618	Mari Kangasniemi L. Alan Winters Simon Commander	Is the Medical Brain Drain Beneficial? Evidence from Overseas Doctors in the UK
617	Vicente Cuatrecasas Maria Guadalupe	Executive Compensation and Product Market Competition
616	James Harrigan Anthony J. Venables	Timelines, Trade and Agglomeration
615	Howard Gospel Paul Willman	Comparatively Open: Statutory Information Disclosure for Consultation and Bargaining in Germany, France and the UK
614	Andrew B. Bernard Stephen Redding Peter K. Schott Helen Simpson	Relative Wage Variation and Industry Location
613	David Marsden	Unions and Procedural Justice: An Alternative to the Common Rule
612	David G. Blanchflower Alex Bryson	The Union Wage Premium in the US and the UK

611	Stephen Gibbons Stephen Machin	Valuing Rail Access Using Transport Innovation
610	Johannes Hörner L.Rachel Ngai Claudia Olivetti	Public Enterprises and Labor Market Performance
609	Nikolaus Wolf	Endowments, Market Potential, and Industrial Location: Evidence from Interwar Poland (1918-1939)
608	Ellen E. Meade David Stasavage	Publicity of Debate and the Incentive to Dissent: Evidence from the US Federal Reserve
607	Ghazala Azmat Maia Güell Alan Manning	Gender Gaps in Unemployment Rates in OECD Countries
606	Henry G. Overman L. Alan Winters	The Geography of UK International Trade
605	Stephen Machin Stephen Wood	Looking for HRM/Union Substitution: Evidence from British Workplaces
604	Maarten Goos Alan Manning	Lousy and Lovely Jobs: the Rising Polarization of Work in Britain
603	Nan-Kuang Chen Hsiao-Lei Chu	Collateral Value and Forbearance Lending
602	Ricardo Peces Helen Bewley Howard Gospel Paul Willman	Is it Good To Talk? Information Disclosure and Organisational Performance in the UK Incorporating evidence submitted on the DTI discussion paper 'High Performance Workplaces – Informing and Consulting Employees'
601	Andy Charlwood	The Anatomy of Union Decline in Britain 1990-1998